Preliminary and Short Report

THE PRODUCTION OF HAIRLESS SKIN IN RATS*

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During the course of experiments with hair pigment in homotransplanted skin of rats, an interesting phenomenon was noted among the transplant failures. 29 of 33 grafts did not take and were sloughed after a varying length of time, usually between 14 and 30 days. Two, however, persisted as long as 40 days, and showed active hair growth in the graft. When the graft was rejected, usually by a slowly progressive necrosis and crusting, the wound did not contract or become covered with granulation tissue, but became covered with hairless epithelium. This epithelium has persisted for 6 to 12 months in 5 animals, and very slowly has been undergoing contraction. This contraction can be observed by the linear hair whorls left in its path. The only hair growth present is on the skin around the defect.

The method of homografting the skin of rats is that described by Woodruff (1). An area of skin 20 mm. square is excised down to the paniculus carnosus. The paniculus itself is left intact and uninjured. A similar piece of skin is taken from a suitable area of the donor rat and is sutured into place on the recipient rat. A vaseline gauze and gauze roll pressure dressing is sutured onto the grafted area. Finally a roller bandage and a plaster cast are applied. These dressings have been removed from 7 to 28 days later. The length of time they are left on appears to have little effect on the future of the graft.

If the animals are fairly closely related and have been prepared with spleen extract injections at birth, the graft will take and will grow hair. If the graft is rejected quickly, the graft becomes hard and leathery after 10 to 14 days and is sloughed off. If the graft is rejected slowly, the graft begins crusting over in small areas in approximately 21 to 28 days. The graft is then replaced over a period of 4 to 6 weeks by a flat scar covered with thin hairless epithelium.

Since the epithelium produced in this manner does not regenerate hair of itself, these findings are contrary to those of Breedis (2), Billingham (3), and Bonlas (4). However, these investigators were working with rabbits, and our observations were made on rats. We used no method of preventing wound retraction.

Experiments repeating the outlined surgical procedure with variations are being conducted in an effort to confirm our observations and to define the essential conditions necessary for the production of this hairless skin.

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